



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/668,448	09/22/2000	Mohammed Ali	4015-755	2160
24112	7590	01/28/2004	EXAMINER	
COATS & BENNETT, PLLC			TRAN, TUAN A	
P O BOX 5			ART UNIT	PAPER NUMBER
RALEIGH, NC 27602			2682	9
DATE MAILED: 01/28/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/668,448	ALI, MOHAMMOD
Examiner	Art Unit	
Tuan A Tran	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 24 December 2003.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 19 and 20 is/are allowed.
- 6) Claim(s) 1,3-13,15-18 and 21-24 is/are rejected.
- 7) Claim(s) 2 and 14 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
 a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ .                                   |

## DETAILED ACTION

### ***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

1. Claims 1, 8, 13, 18 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Dolman et al. (6,272,356).

Regarding claim 1, Dolman discloses a mobile terminal 40 (See fig. 3B) comprising: a body 42; a flip portion 44; and a hinge 46 connecting the body and the flip

portion, the hinge functioning as an antenna for use by an electronic circuit positioned within the mobile terminal (See figs. 3A, 3B, 4-5 and col. 2 lines 30-63, col. 5 line 24 to col. 6 line 47).

Claims 13 and 21 are rejected for the same reasons as set forth in claim 1, as method.

Regarding claim 8, Dolman discloses a mobile terminal as cited in claim 1. The mobile terminal inherently comprises a printed board adapted to hold the electronic circuit.

Regarding claim 18, Dolman discloses as cited in claim 13. Dolman further discloses the step of opening and closing the hinge during operation of the mobile terminal (See col. 2 lines 46-54).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3-5, 9-12 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolman et al. (6,272,356).

Regarding claims 3-5, Dolman discloses as cited in claim 1. However, Dolman does not mention that the antenna: is operative at frequencies between 2.4 and 2.485 GHz (Bluetooth) or within the ISM band; or receives a GPS signal. Since Dolman suggests that the antenna of the mobile terminal as cited in claim 1 can be configured to

operate at multiple frequency bands (See col. 2 lines 55-63, col. 6 lines 11-47) and Bluetooth or ISM band or GPS signal is well known in the art; therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the antenna such that it can operate at frequencies between 2.4 and 2.485 GHz (Bluetooth) or within the ISM band; or receives a GPS signal in order to expand the capability of the mobile terminal to various frequency modes.

Claims 15-16 are rejected for the same reasons as set forth in claims 3-5, as method.

Regarding claims 9-12, Dolman discloses as cited in claim 8. The antenna of the mobile terminal is inherently attached (or connected) to the printed circuit board by at least a fastener in order to operate the mobile terminal. However, Dolman does not mention that the antenna is fastened to the printed circuit board using a first fastener as connection to ground and a second fastener as an RF feed, wherein the fastener are screws. Since antenna structure inherently comprises a ground connection and a RF feed connection and using screws as conductive fasteners is a common technique in the art; therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use screws as fasteners as well as connections of the antenna with the printed circuit board for the advantage of securing an electrical connection between the antenna and the rest of the circuitry to allow the mobile terminal to operate properly.

Claims 17 is rejected for the same reasons as set forth in claims 9-12.

3. Claims 1, 6-7 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (5,930,353) in view of Dolman et al. (6,272,356).

Regarding claims 1 and 6, Lee discloses a mobile terminal (See fig. 1) comprising: a body 203; a flip portion 211; and a hinge, comprising two hinge mechanisms, connecting the flip portion to the body (See figs 1-4 and col. 2 line 28 to col. 3 line 33). However, Lee does not mention that the two hinge mechanisms functioning as a first and second antennas, wherein the antennas operatively connected to the electronic circuitry and for communication at a second operating frequency. Dolman teaches the hinge functioning as an antenna, wherein the antenna operatively connected to the electronic circuitry and for communications at multiple frequency bands (See figs. 3A, 3B, 4-5 and col. 2 lines 30-63, col. 5 line 24 to col. 6 line 47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the Dolman's teachings in modifying the two hinge mechanisms of the mobile terminal as disclosed by Lee to function as an antenna at multiple frequency bands for the advantage of providing multiple antennas that can be incorporated within a radio telephone without requiring impedance matching components and/or circuitry, reducing the costs associated with radio telephone manufacturing, facilitating efforts to miniaturize radio telephones and other electronic devices as well as expanding the capability of the mobile terminal to various frequency spectrums.

Regarding claim 7, Lee & Dolman disclose as cited in claim 6. However, Lee & Dolman do not mention that the first and second antennas that operate at frequencies

between 2.4 and 2.485 GHz (Bluetooth) and receive a GPS signal respectively. Since Dolman suggests that the antenna of the mobile terminal can be configured to operate at multiple frequency bands (See col. 2 lines 55-63, col. 6 lines 11-47) and Bluetooth or ISM band or GPS signal is well known in the art; therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the antennas (first and second antennas) such that they can operate at frequencies between 2.4 and 2.485 GHz (Bluetooth) and receive a GPS signal respectively in order to expand the capability of the mobile terminal to various frequency modes.

Regarding claim 22, Lee discloses a mobile terminal (See fig. 1) comprising: a body 203; a printed circuit board inherently positioned with the body 203, wherein an electronic circuitry inherently positioned on the printed circuit board; at least one antenna, for voice communications at a first operating frequency, operatively connected to the circuitry; a flip portion 211; and a hinge, comprising two hinge mechanisms, connecting the flip portion to the body (See figs 1-4 and col. 2 line 28 to col. 3 line 33). However, Lee does not mention that the hinge functioning as an auxiliary antenna, wherein the auxiliary antenna operatively connected to the electronic circuitry and for communication at a second operating frequency. Dolman teaches the hinge functioning as an antenna, wherein the antenna operatively connected to the electronic circuitry and for communications at multiple frequency bands (See figs. 3A, 3B, 4-5 and col. 2 lines 30-63, col. 5 line 24 to col. 6 line 47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the Dolman's teachings in modifying the two hinge mechanisms of the mobile terminal as disclosed by

Lee to function as an antenna at multiple frequency bands for the advantage of providing multiple antennas that can be incorporated within a radio telephone without requiring impedance matching components and/or circuitry, reducing the costs associated with radio telephone manufacturing, facilitating efforts to miniaturize radio telephones and other electronic devices as well as expanding the capability of the mobile terminal to various frequency spectrums.

Regarding claims 23-24, Lee & Dolman disclose as cited in claim 22. However, Lee & Dolman do not mention that the antenna: is operative at frequencies between 2.4 and 2.485 GHz (Bluetooth); or receives a GPS signal. Since Dolman suggests that the antenna of the mobile terminal can be configured to operate at multiple frequency bands (See col. 2 lines 55-63, col. 6 lines 11-47) and Bluetooth or ISM band or GPS signal is well known in the art; therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the antenna such that it can operate at frequencies between 2.4 and 2.485 GHz (Bluetooth); or receives a GPS signal in order to expand the capability of the mobile terminal to various frequency modes.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Itoh (5,999,831) discloses portable radio.
- Rush et al. (5,606,730) discloses electronic device having an electronic coupler for coupling between two electronic components and method of assembling same.

- Cheng et al. (6,414,643) discloses antenna for portable device.
- Tsuru et al. (6,288,680) discloses antenna apparatus and mobile communication apparatus using the same.

***Allowable Subject Matter***

4. Claims 2 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 2 and 14, Dolman discloses as cited in claims 1 and 13.

However, Dolman fails to mention that the hinge functioning as an inverted-F antenna.

5. Claims 19-20 are allowed.

The following is an examiner's statement of reasons for allowance:

The closest prior art to the claimed subject matter of claims 19-20 is Dolman.

Dolman discloses a mobile terminal comprising a hinge that functions as an antenna.

However, none of prior arts of record shows a mobile terminal comprises a hinge functioning as an inverted-F antenna.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan Tran** whose telephone number is **(703) 605-4255**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Vivian Chin**, can be reached at **(703) 308-6739**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Application/Control Number: 09/668,448  
Art Unit: 2682

Page 10



Tuan Tran

AU 2682



VIVIAN CHN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600